UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/848,520	05/03/2001	Eric Christopher Berg	8070L$&M	7535

27752 7590 02/01/2006

THE PROCTER & GAMBLE COMPANY
INTELLECTUAL PROPERTY DIVISION
WINTON HILL TECHNICAL CENTER - BOX 161
6110 CENTER HILL AVENUE
CINCINNATI, OH 45224

EXAMINER	
FERRIS III, FRED O	

ART UNIT	PAPER NUMBER
2128	

DATE MAILED: 02/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/848,520	BERG ET AL.	
	Examiner	Art Unit	
	Fred Ferris	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 May 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-7,9-13,15 and 17-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-7,9-13,15 and 17-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/22/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 22 November 2005 has been entered. Claims 1-3, 5-7, 9-13, 15, and 17-25 are currently pending in this application. Applicants have canceled claims 4, 8, 14, and 16.

Response to Arguments

2. Applicant's arguments filed 22 November 2005 have been fully considered.

Regarding applicant's response to 101 rejections: The examiner concurs with applicant's arguments that computer programs that are embodied in a tangible medium are in fact statutory as established by In re Beauregard. Claim 17 was not rejected under 101 because it recites a computerized simulation and not a program product. However, the claims at issue, i.e. dependent claims 18, 20, and 21, go beyond the limitations of independent claim 17 by specifically claiming a signal bearing medium. As such, the claims should recite the necessary computer-readable medium encoded with a computer program, as a computer element that defines structural and functional interrelationships between the computer program and the rest of the computer, and permits the computer program's functionality to be realized, in order for the claim to be held as statutory. See: In re Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035. (Fed. Cir.

1994). Claim 21 further recites a non-statutory "carrier wave" and does not fall into one of the four statutory classes (i.e. not physical matter). The examiner therefor maintains the 35 USC 101 rejection of claims 18, 20, and 21.

Regarding applicant's response to 103(a) rejections: Applicant's arguments with respect to claims 1-3, 5-7, 9-13, 15, and 17-25 have been considered but are moot in view of the new ground(s) of rejection. (See new 103(a) rejection below)

Regarding applicants IDS submission: The information disclosure statements filed 28 February 2005 and 22 November 2005 fail to comply with 37 CFR 1.98(a)(3) because no specific publications have been referenced. It has been placed in the application file, but the information referred to therein has not been considered.

Claim interpretation

3. Applicant's are claiming limitations relating to a simulation process for reliability and maintainability analysis of system failures based collected failure mode data representing a first system, and simulating the negative system effects by executing a reliability simulation on a second system. The examiner first notes that such features are generally inherently available in commercially available reliability and maintainability simulators such as AvSim+, RAPTOR, RAM Commander, and BlockSim. (See: "Comparison of Reliability-Availability Mission Simulators", R. Willis) Further, any reliability simulator that uses known (collected) failure data as part of the simulation model, meets the requirements for collecting a first system failure mode data and executing a computer program simulating a second system as recited in claim 1. That

is, the second system, namely the platform running the reliability simulator, is executing a simulation model that is based on the failure mode data collected from a first system. It is further noted that applicant's specification indicates that a "loss event" is merely any event which negatively affects the modeled system or component (page 4, line 5), and that the claimed "false start event" is merely a loss event that occurs quickly relative to the expected life of the system (page 5, line 3). Hence, any reliability simulator that models negative system effects over time, and the expected system life (i.e. MTBF), would inherently meet these limitations by simply modeling negative system effects as discrete events which occur in a short (quick) time relative to the MTBF (expected life). (see 102(a) rejection, BlockSim 1.0, below)

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 18, 20, and 21 are rejected under 35 U.S.C. 101 because the claimed invention is drawn to non-statutory subject matter. *The Examiner submits that claims 18, 20, and 21 are not tangible because Applicant's have not recited any limitations that define programs functionality on the claimed the signal-bearing medium. The claims at issue, i.e. dependent claims 18, 20, and 21, go beyond the limitations of independent claim 17 by specifically claiming a signal bearing medium. As such, the claims should recite the necessary computer-readable medium encoded with a computer program, as a computer element that defines structural and functional*

interrelationships between the computer program and the rest of the computer, and permits the computer program's functionality to be realized, in order for the claim to be held as statutory. See: In re Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035. (Fed. Cir. 1994). Claim 21 further recites a non-statutory "carrier wave" and does not fall into one of the four statutory classes (i.e. not physical matter). The examiner therefor submits that under 35 USC 101 claims 18, 20, and 21 are drawn to non-statutory subject matter.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over "A Quick Overview of ReliSoft's BlockSim", Product Description BlockSim 1.0, ReliaSoft Corp. Jan. 2000 in view of "Empirical Bayes Estimation of the Reliability

forNuclear-Power Plant Emergency Diesel Generators, Martz et al, Technometrics,

Vol 38, No. 1, February 1996.

Independent claim 1, for example, is drawn to:

A simulation process, comprising the following steps:
- *collecting first system failure modes data*
- *analyzing to determine failure modes calculating failure mode for each failure including false start events*

- parameterizing data for computer program simulating second system
- executing computer program simulating second system, where executing step comprises determining whether second system will encounter a first false start event based upon data collected from first system.

Regarding independent claim 1: BlockSim 1.0 is a commercially available Reliability and Maintainability simulator capable of performing a complete system analysis using reliability block diagrams (RBD's) for system definition and performs complex system analysis both analytically and through discrete event simulation. The BlockSim 1.0 program also discloses analyzing a system where each defined block represents a component, assembly, or failure mode with multiple properties (i.e. parameters, see: bottom page 1) and further provides the capability to compute the uptime or downtime for each block (see: top page 2, middle page 4). BlockSim calculates the uptime and downtime for each defined block (i.e. a block can be a failure mode). (obviously calculating a zero uptime within each block would be inherent in the BlockSim capabilities) Also, calculating the cumulative failure modes is interpreted to simply mean calculating the total system failure modes which would also fall within the inherent capabilities of BlockSim 1.0 since BlockSim calculations are carried out on all activated blocks. That is, the BlockSim analysis can be applied to all of the defined

system blocks where blocks (components) can be individually activated or deactivated, see: page 1. BlockSim also provides failure distributions as noted on page 2. BlockSim 1.0 teaches the elements of the claimed limitations of the present invention as follows:

- *collecting first system failure modes data: BlockSim 1.0 allows the user to model the RBD's based on failure mode data collected from field data, vendor data, or performance analysis. (see pages 1, 2, 5)*
- *analyzing to determine failure modes calculating failure mode for each failure mode: BlockSim teaches analyzing a system where each defined block represents a component, assembly, or failure mode with multiple properties (i.e. parameters, see: bottom page 1). BlockSim further provides the capability to compute the uptime or downtime for each block (see: top page 2)*

- parameterizing data for computer program simulating second system: BlockSim 1.0 provides a GUI based user input for inputting failure mode and system data parameters (parameterized) into the reliability simulator program (i.e. second system). (see page 2)

- executing computer program simulating second system, where executing step comprises determining whether second system will encounter a first false start event based upon data collected from first system: The examiner first notes that, as recited above, any reliability simulator that uses known (collected) failure data as part of the simulation model, meets the requirements for collecting a first system failure mode data and executing a computer program simulating a second system as recited in claim 1. That is, the second system,

namely the platform running the reliability simulator, is executing a simulation model that is based on the failure mode data collected from a first system. BlockSim 1.0 clearly teaches this limitation because the reliability block diagrams (RBD's) used by BlockSim can represent the failure mode of a component, subassembly, or assembly with multiple properties that can be collected from field data, vendor data, or performance analysis. (see pages 1, 2, 5) It is also noted that applicant's specification merely defines a "loss event" as any event that negatively affects the modeled system or component (page 4, line 5), and a "false start event" as a loss event that is quick relative to the expected life of the system (page 5, line 3). BlockSim 1.0 also clearly teaches these limitations since negative effects on the components and system (represented by RBD's) are modeled as discrete events that include failure and repair distribution (Weibull, mixed, lognormal, normal, exponential, downtime, uptime, mean availability, expected failures, point availability, etc.) for series, parallel, complex and K out of N configurations. (see pages 2, 3).

BlockSim 1.0 does not explicitly disclose that the data include one or more false start events. (Although the examiner maintains that this feature would be inherent in BlockSim since the negative effects (loss events) on the RBD's can be represented (modeled) as being short (quick) relative to the expected life (MTBF) of the system.)

Martz specifically discloses analysis of data inclusive of false start events (i.e. the probability of a loss event that occurs quickly relative to the expected life of the system) within a system. (Sections 1, 3.2, 3.3-3.6, 4, Tabs. 1 & 8)

It would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to modify the teachings of BlockSim relating to analyzing failure mode of a system inclusive of computing uptime/downtime, with the teachings of Martz relating analysis of data inclusive of false start events, to realize the elements of the claimed invention. An obvious motivation exists since, as referenced in the prior art, computing total reliability is defined as the product of binomial reliability to start on demand. (See: BlockSim/Martz, Abstract/Conclusion). Accordingly, a skilled artisan tasked with realizing a system and method for analyzing system failures modes by simlation, and having access to the teachings of BlockSim and Martz, would have knowingly modified the teachings of BlockSim with the teachings of Martz (or visa versa) to realize the claimed elements of the present invention.

Per dependent claim 2: BlockSim 1.0 models first system failure mode data on a second (same) system as noted above.

Per dependent claim 3: BlockSim 1.0 models any type or repairable mechanical (i.e. manufacturing) system. (pages 4, 5)

Per dependent claim 5: BlockSim 1.0 calculates the uptime for failure modes. (page 2)

Per dependent claim 6: Determining which failure mode causes a loss event would be inherent in BlockSim 1.0 since the RBD's model both the failure mode and loss events. (see: pages 1-3)

Per dependent claim 7: BlockSim 1.0 calculates the downtime for failure modes. (page 2).

Per dependent claim 8: BlockSim 1.0 provides multiple distributions for failure modeling including Weibull, exponential, normal, lognormal, etc. (see page 2)

Per dependent claim 9: BlockSim 1.0 provides multiple (cumulative) failure properties for failure modes. (page 1)

Per dependent claims 10 and 11: Calculating cumulative and competing failure modes and determining related loss event causes would be inherent in BlockSim 1.0 since the RBD's model multiple failure modes, loss event properties, and the uptime/downtime of failure modes. (see: pages 1-3)

Per dependent claim 12: BlockSim 1.0 calculates the RBD's model for multiple failure modes, loss event properties, and the uptime/downtime of failure modes. (see: pages 1-3) Therefore, determining a second "false start event" is also inherent BlockSim since the negative effects (loss events) on the RBD's can be represented (modeled) relative to the downtime for a second loss event. BlockSim 1.0 provides multiple (cumulative) failure properties for failure modes. (page 1)

Per dependent claim 13-15: BlockSim 1.0 calculates (outputs) the system reliability and availability (pages 1, 3, 4).

Per dependent claim 16: BlockSim 1.0 provides facilities for modifying the system RBD parameters as result of optimization (page 3) and analysis (page 4) processes.

Per independent claim 17: As previously cited above, BlockSim 1.0 clearly teaches receiving values for multiple data parameters relating to failure mode and negative effects on the components and system (represented by RBD's) for a first and second system. These parameters are used to model discrete events that include

failure and repair distribution (Weibull, mixed, lognormal, normal, exponential, downtime, uptime, mean availability, expected failures, point availability, etc.) for series, parallel, complex and K out of N configurations. (see pages 2, 3) Therefore, determining a "false start event" is inherent BlockSim since the negative effects (loss events) on the RBD's can be represented (modeled) as being short (quick) relative to the expected life (MTBF) of the system.

Per dependent claims 18-22: This group of claims merely claims the computer program product with machine readable instructions for carrying out the reliability simulation limitations of claim 17. BlockSim 1.0 is a commercially available software product, which operates on a commercially available PC or workstation platform, that is provided embodied on magnetic or optical medium, or via a computer network via the internet. (see page 6)

Regarding new claims 23-25: These claims include the limitations of preceding claims relating to data collection and false start events which are rejected using the reasoning cited above. However, the additional limitations relating to recording the collected failure data would obviously be inherent to the system RBD parameters as result of optimization (page 3) and analysis (page 4) processes disclosed by BlockSim.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Careful consideration should be given prior to applicant's response to this Office Action.

"Field Data is Reliability Information: Implementing an Automated Data Acquisition and Analysis System", J. Jauw et al, Proceedings IEEE Annual Reliability and Maintainability Symposium, Jan. 2000 teaches reliability and maintainability simulators.

"A Quick Overview of ReliSoft's BlockSim", Product Description BlockSim 1.0, ReliaSoft Corp. Jan. 2000 teaches reliability and maintainability simulators.

"Comparison of Reliability-Availability Mission Simulators", R. Willis, Society of Reliability Engineers, 2002 teaches reliability and maintainability simulators.

"Modeling & Analysis for Multiple Stress-Type Accelerated Life Data", A. Mettas, Proceedings IEEE Annual Reliability and Maintainability Symposium, Jan. 2000 teaches reliability and maintainability simulators.

"Reliability Allocation and Optimization for Complex Systems", A. Mettas, Proceedings IEEE Annual Reliability and Maintainability Symposium, Jan. 2000 teaches reliability and maintainability simulators.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 571-272-3778 and whose normal working hours are 8:30am to 5:00pm Monday to Friday. Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 571-272-3700. If attempts to reach the

examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached at 571-272-2279. The Official Fax Number is: (703) 872-9306

Fred Ferris, Patent Examiner
Simulation and Emulation, Art Unit 2128
U.S. Patent and Trademark Office
Randolph Building, Room 5D19
401 Dulany Street
Alexandria, VA 22313
Phone: (571-272-3778)
Fred.Ferris@uspto.gov
January 26, 2006